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Amicodisca castaneae sp. nov. (*Hyaloscyphaceae, Helotiales*) on Japanese chestnut bur

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Abstract— *Amicodisca castaneae* sp. nov. was collected on Japanese chestnut bur. It differs from all known members of *Amicodisca* by having brownish apothecia and smaller asci and ascospores. A key to the accepted *Amicodisca* species is given.

Key words— *Castanea crenata*, discomycetes, species nova, taxonomy

Introduction

Svrček (1987) established a monotypic genus *Amicodisca* Svrček, typified by *Amicodisca brdensis* (Velen.) Svrček (≡ *Dasyscyphus brdensis* Velen.), which is characterized by yellowish to olivaceous colored excipulum and hairs, ascospores bearing lemon-yellow pigment dissolving in NH_4OH or KOH solutions, and fimbriate dehiscence of the ascus pore. *Amicodisca viridicoma* (Peck) J.H. Haines, *A. svrcekii* Raitv. & Huhtinen, and *A. groenlandica* Raitv. were later additionally described (Haines 1989; Raitviir 2001, 2003). Since Huhtinen (1994) proposed *A. virella* (P. Karst.) Huhtinen (with its earlier basionym) as the correct name for the type species, and Raitviir (2004) listed *A. viridicoma* as a synonym of *A. virella,* there are three species now recognized.

In the course of extensive survey on the fungal biodiversity in Korea, an interesting discomycete with small apothecia surrounded with yellowish hairs was collected on fallen burs of Japanese chestnut (*Castanea crenata* Siebold & Zucc.). Its gross morphology and microscopic features fit well with those of *Amicodisca,* but it is clearly different from the known species in having remarkably smaller asci and ascospores and by host preference. Here, we describe and illustrate this fungus as new to science.

Materials & methods

Fresh materials were primarily mounted in distilled water to confirm the natural colors of their microstructures. Dried materials were revived in 3–10% aqueous KOH. Amyloid reactions were tested by Melzer's reagent (MLZ) or Lugol's solution (IKI) without KOH pretreatment. Olympus BX50 microscope equipped with a drawing tube (Olympus U-DA) was used for measurements and line drawings. Structures were measured at 1000×; measurements are reported as follows: minimum–maximum (length) × minimum–maximum (width) [mean length ± standard deviation × mean width ± standard deviation, Q (l/w ratio) = average ± standard deviation]. All specimens examined are deposited in the Herbarium of Korea University, Seoul, Korea (KUS) or National Museum of Nature and Science, Tsukuba, Japan (TNS).

Taxonomy

Amicodisca castaneae J.G. Han, Hosoya & H.D. Shin, **sp. nov.** Figs. 1–2

MycoBank 561134

Apothecia sessilia, bruneta, receptaculo dense sulphureo longipiloso. Pili cylindro-conique, 2–5-septati, tenuiter tunicatis, 63–107 × 2–3 µm. Excipulum ectale ex textura angularis ad prismatica compositur. Asci non uncinati, cinereae, 38–57 × 4–5.2 µm. Sporae ellipsoidea ad clavato-ellipsoideae, hyalinae ad cinereae, 4.8–7 × 1.4–2 µm. Ab Amicodiscae svrcekii *ascosporis brevius et pili septatae differens.*

Type: The inner surface of chestnut bur (*Castanea crenata*), Korea, Goesan, Songnisan National Park, 36°44′42.54″N, 128°53′53.33″E, 320 m a.s.l., 5 Oct. 2007, J.G. Han & H.D. Shin (KUS-F51917 **Holotype**; TNS-F32105 **Isotype**).

Etymology: The specific epithet refers to the generic name of the host.

Apothecia superficial, scattered to gregarious, developed on well-developed anchoring hyphae, broadly sessile; Receptacle at first globose to cupulate, then becoming discoid, externally covered by yellowish white hairs, turning reddish-brown when dry; Disc up to 3 mm in diameter, greyish-brown to chestnut when fresh, turning dark brown to dark grey when dry; Hairs cylindric-conical, straight, gradually tapering toward the apex, hyaline to yellowish, 2–5-septate, thin-walled, smooth, apex not sharply pointed, up to 3 µm wide near the base, 63–107 µm long; Ectal excipulum yellow to light brown, composed of thin-walled angular to rectangular cells, 7–12 × 4–7 µm; Asci arising from simple septa, cylindric-clavate, yellowish, 8-spored, apical pore blued in MLZ and IKI without KOH pretreatment, 38–57 × 4–5.2 µm (45.2 ± 4.19 × 4.5 ± 0.41 µm, n = 50); Ascospores biseriate, ellipsoid to clavate or ovoid, hyaline to light yellow, aseptate, eguttulate, occasionally containing a central guttule, smooth, 4.8–7 × 1.4–2 µm (5.7 ± 0.69 × 1.6 ± 0.18 µm, Q = 3.6 ± 0.62, n = 120); Paraphyses filiform, hyaline to yellowish, septate, slightly bent, sometimes branched, slightly exceeding the asci, up to 1.5 µm wide.

Additional specimens examined – the inner surface and spines of chestnut bur: KOREA, Wonju, Chiaksan National Park, Geumdae valley, 37°17′44.44″N, 128°01′10.34″E, 370 m a.s.l., 9 Sep. 2006, J.G. Han & H.D. Shin (KUS-F51377);

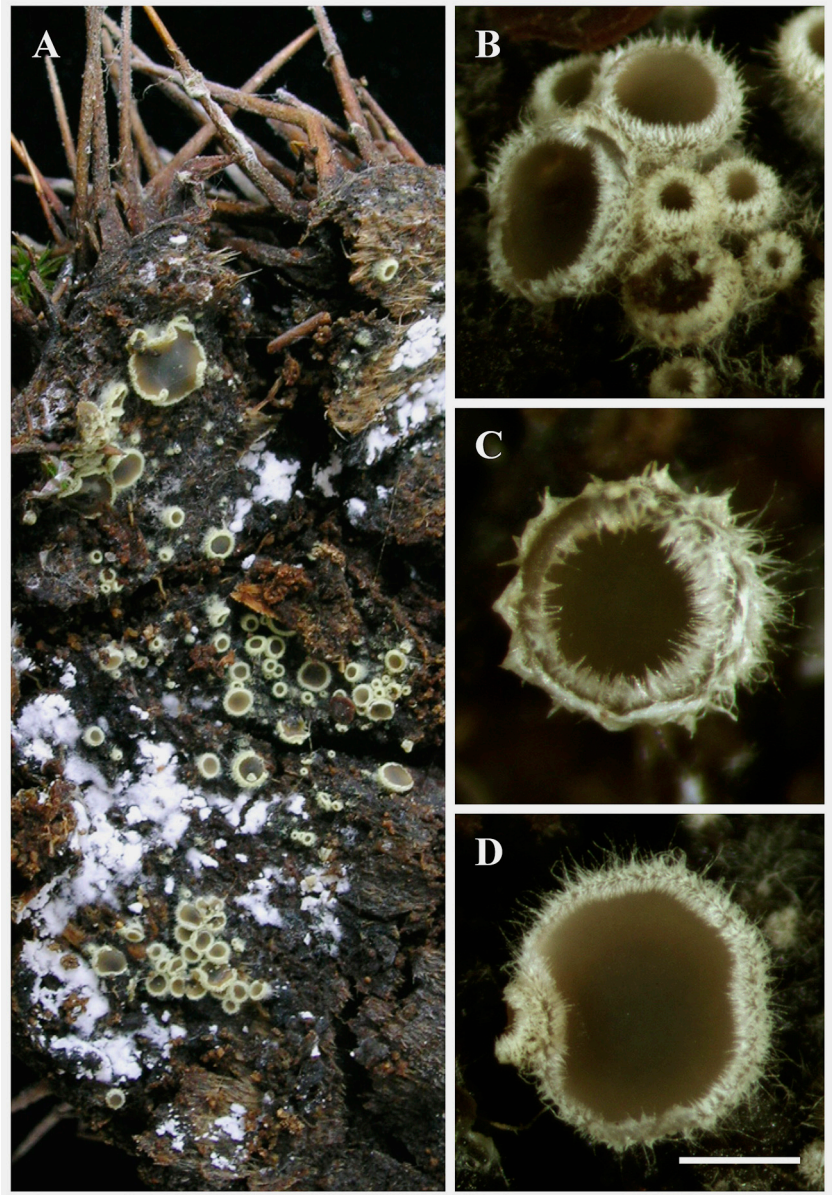

Fig. 1. *Amicodisca castaneae* (holotype KUS-F51917). A: Fruiting bodies on a fallen bur of *Castanea crenata*, B: Sessile apothecia densely gregarious, C: An immature apothecium, globose to cupulate, D: A mature apothecium, expanded. Scale bar: C–D = 1 mm.

Boryeong, Oseosan recreation forest, 36°26′31.52″N 126°40′3.2″E, 240 m a.s.l., 27 Oct. 2007, J.G. Han & H.D. Shin (KUS-F51993).

Discussion

Amicodisca is a small group of hyaloscyphaceous discomycetes characterized by a lemon-yellow colored excipulum, hairs, and ascospores (Svrček 1987). Although its dark globose ectal cells and translucent greyish hymenium suggest a relationship to *Dermateaceae*, many authors (Svrček 1987; Haines 1989; Huhtinen 1994; Huhtinen & Læssøe 2001; Raitviir 2003, 2004) have preferred to assign the genus to the *Hyaloscyphaceae* based on the presence of distinct hairs. *Dematioscypha* Svrček is similar to *Amicodisca* in having a dark excipulum and cylindric hairs with tapering apices, but differentiate the genus by its hyaline hairs with glassy apices, inamyloid ascal pore, and association with a *Haplographium* anamorph. Superficially, it is also reminiscent of *Dennisiodiscus* Svrček in sessile apothecia with greyish hymenium and bright colored surrounding hairs, but differs in hairs encrusted by reddish brown granules and growing on culms or leaves of monocotyledonous hosts.

Macroscopically, the present fungus is easily discriminated from other species by relatively large apothecia (≤ 3 mm diam.) with brownish hymenium. In contrast, all known species of *Amicodisca* produce greyish or olivaceous apothecia and are usually smaller than 1 mm in diameter. *Amicodisca castaneae* is microscopically closest to *A. svrcekii* and *A. virella*, but their larger ascospores (8–11 and 17–25 μm long, respectively) and slightly narrower paraphyses (0.8 and 1 μm broad, respectively) are different. *Amicodisca groenlandica* strikingly differs in much larger asci (92–116 × 12–15 μm) and ascospores (20–27 × 3–5 μm).

The specificity of *A. castaneae* to chestnut burs seems to be another notable feature. Hitherto all known *Amicodisca* species have been collected on woody substrates (Raitviir 2004), such as *Alnus, Betula, Salix, Sambucus,* and other deciduous trees.

A key to the accepted species of the genus is provided below.

Key to the accepted species of *Amicodisca*

1a. Fruiting bodies formed on chestnut bur; disc brownish ..... ***A. castaneae***
1b. Fruiting bodies formed on woods; disc greyish or olivaceous **2**
2a (1b). Disc pale greenish-olivaceous when fresh, becoming dark green when dry; asci longer than 80 μm ..... ***A. groenlandica***
2b. Disc greyish when fresh and dry; asci shorter than 80 μm **3**
3a (2b). Ascospores 8–11 × 1.8–2.5 μm ..... ***A. svrcekii***
3b. Ascospores 17–25 × 4–6 μm ..... ***A. virella***

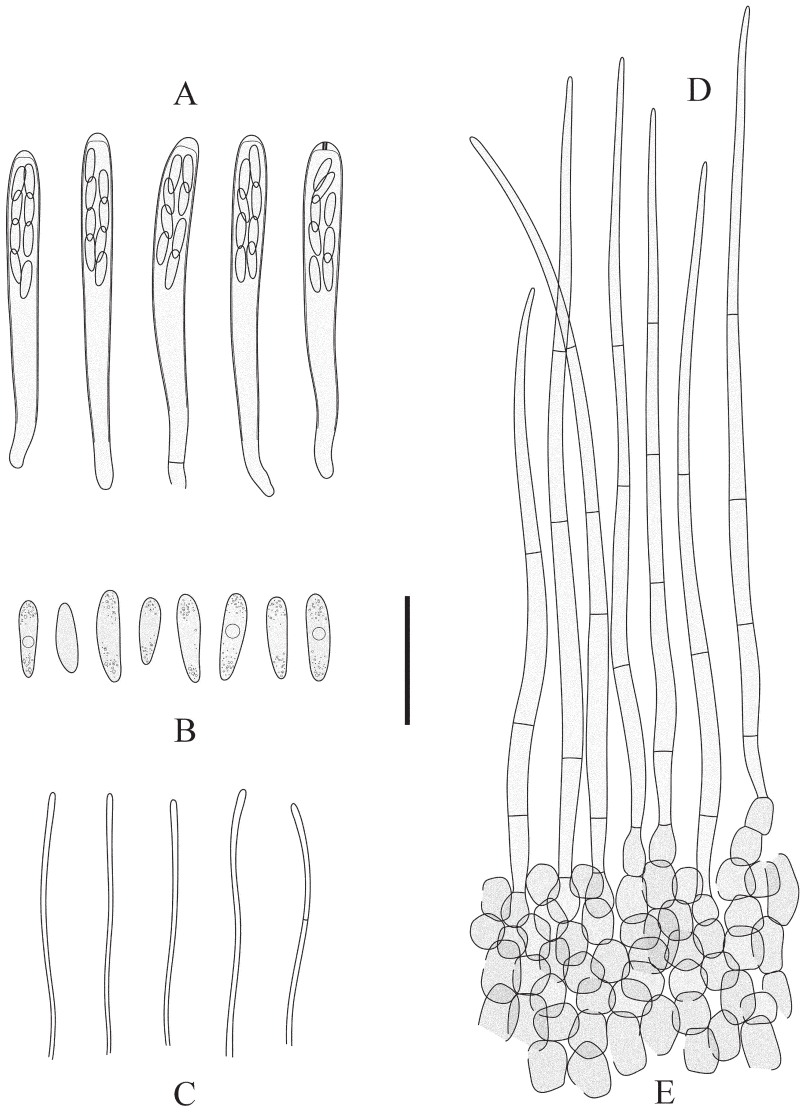

Fig. 2. *Amicodisca castaneae* (holotype KUS-F51917). A: 8-spored asci, note on the apical pore blued in MLZ, B: Ellipsoid to ovoid ascospores with pale yellowish pigments, C: Filiform paraphyses, D: Cylindric hairs with tapering apices, E: Brownish ectal excipulum composed of texture angularis to prismatica. Scale bars: A and C–E = 20 µm, B = 10 µm.

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